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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,106	11/13/2003	Young-jun Park	030681-592	6486

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EXAMINER	
TAKAOKA, DEAN O	

ART UNIT	PAPER NUMBER
2817	

DATE MAILED: 02/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

CT

Office Action Summary	Application No.	Applicant(s)	
	10/706,106	PARK ET AL.	
	Examiner	Art Unit	
	Dean O. Takaoka	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *12-18* is/are allowed.

6)☒ Claim(s) *1,4 and 8-11* is/are rejected.

7)☒ Claim(s) *2,3 and 5-7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/13/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 4, 8 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Ma (U.S. Patent No. 6,753,582).

Claim 1:

Ma shows a MEM switch comprising a substrate (unlabeled shown in the prior art of Fig. 2); a signal line (66) formed on the substrate; a beam (54 or 56) deformed by an electrostatic force to electrically switch with the signal line; and a spring type contact unit (52, 110 et al.; col. 4, lines 63, 64) formed on the signal line to electrically contact the beam and elastically deformed by an external force (Figs. 3A – 3D; col. 3, line 46 to col. 4, line 24).

Claim 4:

Where the contact unit (52, 110) is formed into an arch shape having end units (68A, 68B).

Claim 8:

Where the beam (54) is suspended by spacers (69A, 69B) that support the beam by being formed at both sides of the beam (Fig. 3A).

Claim 10:

Where dielectric layers are formed on the beam driving electrodes (dielectric layers 71 and 81 formed on conductors 70 and 80).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ma (U.S. Patent No. 6,621,022) in view of Ma (U.S. Patent No. 6,753,747).

Claim 1:

Ma ('022) shows a MEM switch comprising a substrate (110); a signal line (not shown but obvious where contact 120 would be connected to the signal line, e.g. switch) formed on the substrate; a beam (170A) deformed by an electrostatic force to electrically switch with the signal line; and a contact unit (120C) formed on the signal line to electrically contact the beam and elastically deformed by an external force but does not show the contact unit comprising a spring type contact unit.

Ma ('747) shows a most nearly identical MEM switch where the contact unit (18) comprises a spring type contact unit.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted the flat contact unit disclosed by Ma ('022) with the spring type contact unit disclosed by Ma ('747). Such a modification would have realized the advantageous benefit of reducing resistance contact making the switch more reliable (col. 1, lines 17-21); further where both prior art teachings are by the same inventor thus suggesting the obviousness of the modification.

Claim 4:

Where Ma ('747) shows the contact unit (18) is formed into an arch shape having end units (on each side of the arch).

Claim 8:

Where the beam is suspended by spacers that support the beam by being formed at both sides of the beam (where Ma '022 shows a bridge beam with spacers supporting both ends of the beam – Fig. 22).

Claim 10:

Where Ma ('022) shows dielectric layers (130, 140 – Fig. 5 with respect to electrode 120B – Fig. 1) formed on the beam driving electrodes.

Claim 11:

Where Ma ('022) shows a rear end of the beam is fixed by a spacer formed on the substrate and a front end of the beam is located above the contact unit of the signal line (shown in Fig. 1).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ma ('022) and Ma ('747) as applied to claims 1 and 8 above, and further in view of Ma (U.S. Patent No. 6,686,820).

Ma ('022) and Ma ('747) teach the MEM switch discussed in the reasons for rejection of claim 1 and 8 above, but does not specifically show where the beam is arranged perpendicular to the signal line, and beam driving electrodes are arranged under the beam and at both sides of the signal line.

Ma ('820 – Figs. 6A and 6B) shows a MEM switch comprising a beam (152) arranged perpendicular to the signal line (144), and beam driving electrodes (142) are arranged under the beam and at both sides of the signal line.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the beam is arranged perpendicular to the signal line, and beam driving electrodes are arranged under the beam and at both sides of the signal line disclosed by Ma ('820) where such a modification would have realized the advantageous benefit of providing a distributed electrode design ensuring good contact because the actuation force surrounds the dimple contacts (col. 7, lines 50-53); further where all prior art teachings are by the same inventor thus suggesting the obviousness of the modification.

Allowable Subject Matter

Claims 12 – 18 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: Ma shows a MEM switch comprising first and second adjacent signal lines and a deformable beam but does not show spring type contact units arranged at both ends of the signal lines. Ma shows a single spring type contact unit for each pair of transmission lines and not plural units such as shown in Applicant's Fig. 4.

Claims 2, 3, and 5 – 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dean O. Takaoka whose telephone number is (571) 272-1772. The examiner can normally be reached on 8:30a - 5:00p Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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February 14, 2005